Appendix D

Field Exercise Mode/Embedded Training

USES

Field exercise mode (FEM) and embedded training are off-line, separate computer programs that function with the radar's existing operational programs to allow the radar to be used in a training mode. FEM is part of the operational program for systems equipped with (V)7 shelters and embedded training is a part of the operational program for systems equipped with (V)8 shelters. These off-line training programs provide the operator with realistic operating scenarios for the purpose of evaluating and improving proficiency. The scenarios include real-time simulation of hostile and friendly weapons fire.

FEM/embedded training increases the radar operator's ability to process targets and communicate with other net subscribers. It allows radar operators to perform all normal mission-processing functions. However, when the simulation is running the radar will not radiate when the radiate switch lamp is pressed. FEM/embedded training allows trainers to develop scenarios that present radar operators with a high density of hostile and friendly targets and conduct real or simulated communications with other net subscribers.

SECTION AND/OR PLATOON TRAINING

FEM/embedded training provides a vehicle for training an individual radar section or an entire radar platoon in either a garrison or field environment. The system's ability to simulate digital communications or communicate with actual tactical systems makes this possible. An individual section can train by itself and the scenario will replicate all digital communications. Or, a radar section or sections can send their acquisitions to an actual FDC or counterfire headquarters. This provides the opportunity to train the target processing section and targeting team members while providing realistic training for all radar operators.

GUNNERY TEAM TRAINING

The entire gunnery team can benefit from the use of FEM or the embedded training program during rehearsals, before the conduct of actual operations, or during command post exercises (CPXs), live-fire training, and maneuver exercises. These programs allow the development of scenarios that reflect the actual tactical situation or exercise event list. This facilitates training of the entire gunnery team and provides the capability to conduct fire support and technical rehearsals for actual situations.

SCENARIO DEVELOPMENT

The common steps for developing training using FEM or embedded training program are:

- Step 1. Determine training goals (mission requirements for the exercise). These should include:
  - Mission-essential task list (METL) requirements.
  - ARTEP mission training plan (AMTP) requirements.
- Step 2. Analyze resources to include:
  - Training areas available.
  - Support available:
    - IFSAS/AFATDS (battalion or DIVARTY).
    - Aggressor.
    - Pyrotechnics.
    - FIST elements.
    - Other.
- Step 3. Develop an OPORD:
  - Determine intelligence sources and estimates.
  - Determine commander's targeting criteria.
  - Determine commander's priority guidance for radar.
  - Use the FEM overlay and embedded training target table to determine the following data for the RDO:
    - Radar location.
    - Search data.
    - Zone data.
    - Reporting channels.
    - Cueing agents.
  - On the basis of the scenario and OPORD, identify simulation targets to be used.
- Step 4. Develop a plan for updating and changing the tactical situation and mission. The plan should include:
  - Tactical movements.
  - Intelligence updates.
  - Radar search and zone data.
  - Nuclear, biological, chemical (NBC) situation.
  - EW threat.
  - Cueing agents.
- Step 5. Develop the scenario target tables using the detailed procedures for selecting and loading target data into the FEM or embedded training simulation program.

EMBEDDED TRAINING

Planning and developing the embedded training scenario and simulation data should be a team effort between the S2, targeting officer, and the radar section leader. The team should follow these steps.

- Step 1. Review each phase of the tactical operation to determine and record probable enemy mortar, artillery, and rocket firing locations.
- Step 2. Once the locations have been determined for each phase and/or event they are sequenced into a simulation target table for the radar.
- Step 3. Load the target table using the Scenario Generation screen.
- Step 4. The operator selects ADD on this screen and enters each target separately with the following elements of data: Weapon Type**,** Weapon Velocity and Quadrant Elevation, Weapon Location (complete UTM grid/altitude), Impact Location (complete UTM grid/altitude), Firing Interval, Time On and Time Off, and Volley.
- Step 5. After entering each individual target, the operator must wait for a response to determine acceptability of the data entered. If the program accepts the target with no response, the data becomes a part of the scenario target file.
- Step 6. These targets are entered, numbered, and/or time sequenced.
- Step 7. After all targets from the target table have been entered and accepted, the scenario is saved for use in the training exercise.

Note: This is a lengthy and time-consuming process, and it must have the support and cooperation of the command elements to achieve success.

FEM

Radar equipped with the FEM program can also use the target table designed by the command team to prepare for training exercises. However, the procedures for determining and loading target data are totally different from those used in embedded training. To design and load target data into the FEM program these steps must be followed:

- Step 1. Load FEM targets from the target tables located in the radar operator's manual into the FEM program.
- Step 2. After all targets are loaded, each target is recalled individually and plotted on a transparent overlay as it appears on the radar map drum. This process is continued until all targets loaded into the FEM program are recorded on the overlay.
- Step 3. The overlay is removed from the map drum and used by the command team to determine data for the target table.
- Step 4. The overlay is positioned on the command team situation map with the radar position on the overlay aligned with the radar position on the map.
- Step 5. The overlay is traversed in azimuth until target numbers on the overlay are located over the enemy locations plotted by the team.

- Step 6. The target number corresponding to starting enemy locations is recorded and the process continues through all subsequent locations and events as determined in the scenario review.
- Step 7. The target numbers, radar location, radar azimuth, and call for fire zones around those enemy locations are recorded as part of the target table.

> Note: Call for fire zones must be placed around the enemy locations for the radar to produce a fire mission. Zone data is not required if a call for fire is not desired.

- Step 8. Repeat steps 4 through 7 on all radar and enemy locations until the scenario sequence of events is complete and all target data is recorded in the table.

Scenario development is not complete until exercise control measures are developed. These measures should be developed in conjunction with the sequence of events to facilitate a productive training exercise.

IMPLEMENTING THE SCENARIO

CONTROL ELEMENT

The command or exercise control element determines commander's priority guidance for radar, radar search data, cueing agents, and cueing guidance. These determinations are based on:

- The scenario.
- METT-TC.
- Intelligence estimates.
- Target value analysis (TVA).
- High-payoff target list.
- Commander's attack guidance.
- Targeting priorities.
- The FEM target overlay.
- FEM target table.
- The scenario event target table for (V) 8 systems.

The control element implements the scenario using the aforementioned considerations.

CUEING AGENTS

Cueing agents are designated and provided a copy of the scenario target tables by the command or control element. They must be able to identify the cueing criteria required and the method they are to use to cue the radar section. When the cueing criteria are met during the exercise, the cueing agent sends the cue command to the radar.

RADAR SECTION

After receiving the initial search data and commander's priority guidance, the section prepares the radar to support the mission. When notified by the command or control element, the radar operator turns on the appropriate simulation targets. The section then waits for the cue command from the cueing agent. When the section receives the cue command, the operator turns on the radar transmitter, processes the targets, and transmits them digitally to the controlling headquarters.

CONTROLLING HEADQUARTERS

The controlling headquarters processes targets received from the radar according to the commander's criteria established in their tactical fire direction system. The commander's criteria should conform to the exercise guidance issued by the command or control element. Normally, fire missions will be generated for priority targets. Artillery target intelligence reports will be sent to the TOC and/or the targeting element where they will be entered in the tactical fire direction system.

TOC AND/OR TARGETING ELEMENT

The TOC and/or targeting element will process the weapon locations and impact predictions.

FIRING ELEMENT

Upon receipt of fire missions, the firing unit generates firing commands (live or dry fire).

NOTE: Use of the FEM or Embedded Training program during live-fire exercises can generate fire missions in an impact area if the proper search and zone data are entered into the radar. Other targets will provide useful training for the TOC and targeting elements.